

IN THE CLAIMS:

1. A portable data collection terminal comprising:

a base module comprising a first processing unit and a first storage element that stores base module communication software;

a selected one of a plurality of communication modules, each communication module comprising a second processing unit, a second storage element that stores communication module software, and at least one of a plurality of radio transceivers, each of the plurality of radio transceivers having different operating characteristics; and

wherein the second processing unit, using the communication module software, isolates the first processing unit, which uses the base module communication software, from differences in the operating characteristics of the plurality of radio transceivers.

2. The portable data collection terminal of claim 1 further comprising:

a base connector, disposed on said base module, that is electrically connected to said first processing unit; and

a common communication connector capable of matingly attaching to the base connector, disposed on each of said plurality of communication module, that are electrically connected to the corresponding second processing unit.

3. The portable data collection terminal of claim 1 further comprising:

a predetermined set of antennas connected to said base module;

and

5 means for selectively connecting at least one of said plurality of antennas to the selected one of the plurality of communication modules.

4. A portable data collection terminal comprising:

a first processing unit capable of operating per a first set of communication software routines;

5 a selected one of a plurality of radio transceivers, each of the plurality having different operating characteristics; and

a second processing unit capable of isolating the first processing unit from differences in the operating characteristics of the plurality of radio transceivers.

5. The portable data collection terminal of claim 4 further comprising:

a base module containing the first processing unit; and

5 a communication module containing the second processing unit and the selected one of the plurality of radio transceivers.

6. The portable data collection terminal of claim 5 further comprising:

a plurality of antennas connected to said base module; and
means for selectively interconnecting at least one of said
5 plurality of antennas to the communication module.

7. The portable data collection terminal of claim 6 wherein the plurality of antennas are chosen prior to the selection from the plurality of the radio transceivers.

8. The portable data collection terminal of claim 5 further comprising:

a preinstalled antenna connected to said base module;
an antenna connector capable of connecting a variety of
5 external antennas; and

means for selectively interconnecting the preinstalled antenna or the antenna connector to the selected one of the plurality of radio transmitters.

9. In an RF communications network having a communication channel, an access point and a portable data collection terminal, wherein the portable data collection terminal having a transceiver which may be selectively powered up or down to conserve energy, a
5 method used by the portable data collection terminal for gaining access to the communication network, comprising the steps:

(a) powering up the transceiver;

(b) sensing the communication channel for a first predetermined time;

10 (c) if during the sensing of the communication channel the channel remained clear, transmitting to the access point; and

(d) if during the sensing of the communication channel the ^{channel} did not remain clear, waiting for a second predetermined time, and branching to step (b).

10. The method of claim 9, wherein said first predetermined time is greater than or equal to the maximum time between the access point's transmissions when engaged in a communications exchange.

11. In an RF communications network having a communication channel, an access point and a portable data collection terminal, wherein the portable data collection terminal having a transceiver which may be selectively powered up or down to conserve energy, a
5 method used by the portable data collection terminal for gaining access to the communication network, comprising the steps:

(a) powering up the transceiver;

(b) resetting a retry count;

10 (c) sensing the communication channel for a first predetermined time;

(c) if during the sensing of the communication channel the channel remained clear, transmitting to the access point, else, if the channel did not remain clear, incrementing a retry count; and

15 (e) if the retry count is less than a threshold value,
branching to step (c), else, powering down th transmitter for a
period of time before branching back to step (a).

5 12. In a local area communications network having a
communication channel, a host computer, an access point, and a
portable data collection terminal, wherein the portable data
collection terminal has the capability to enter a sleep mode when
not transmitting or receiving, and the access point periodically
transmit SYNC messages, a method used by the portable data
collection terminal for gaining access to the communication
network, comprising the steps:

10 (a) waking up when data is available for transmission to the
host computer;

(b) waiting for a first predetermined time in order to
receive a SYNC message from the access point;

(c) sensing the communications channel for a second
predetermined time to determine if the channel is busy;

15 (d) transmitting a request for poll to the access point if
the channel is clear for the second predetermined time; and

(e) if the channel is busy during the second predetermined
time, repeating step (b).

13. The method of claim 12, wherein said first predetermined
time is greater than or equal to the time between SYNC messages
minus the maximum interpoll gap time.

14. The method of claim 12, wherein said second predetermined fixed time is greater than or equal to the maximum interpoll gap time.

15. A method used by a sending device for beginning a data exchange over an RF communication link with a polling device, wherein the polling device has an interpoll gap time, comprising the steps of:

5 (a) identifying that the RF communication link is clear throughout a period which is at least as long as the interpoll gap time; and

(b) transmitting a request for poll frame.

10 16. The method of claim 15 further characterized by the steps of:

(a) generating a pseudo-random number corresponding to a first pseudo-random time which is at least as long as the interpoll gap time;

15 (b) sensing the channel for a time substantially shorter than the first pseudo-random time;

(c) repeating step (b) until the channel is detected as being busy, or the channel is detected as being clear at every sense until the first pseudo-random time is reached;

20 (d) if the channel is detected as being busy, executing a second pseudo-random time delay back-off and returning to step (a); and

(e) if the channel has been detected as being clear for the entire first pseudo-random time period, transmitting a request for poll frame.

17. The method of claim 16 wherein step (d) further comprises the step of incrementing a retry counter and testing said retry counter such that a second pseudo-random back-off and retry will not be performed if said retry counter is above a predetermined threshold value.

18. In a communication network having a first and second subnetwork, a portable data collection terminal comprising:

a base processing unit capable of operating per a first set of communication software routines;

a first selected one of a plurality of radio transceivers, each having different operating characteristics;

a second selected one of a plurality of radio transceivers, each having different operating characteristics; and

a communication process capable of isolating the base processing unit from differences in the operating characteristics of the first and second radio transceiver.

19. The portable data collection terminal of Claim 18 wherein the communication processor comprising:

a first processing unit capable of isolating the base processing unit from the differences between the first selected one

5 of the plurality of radio transceivers and the remaining of the plurality of radio transceivers; and

a second processing unit capable of isolating the base processing unit from the differences between the second selected one of the plurality of radio transceivers and the remaining of the plurality of radio transceivers.

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20. The portable data collection terminal of Claim 18 further comprising the communication processor comprising:

a base module containing the base processing unit; and

a communication module containing the communication processor

5 and the selected first and second radio transceivers.